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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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7590 04/23/2003  
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EXAMINER

DOUGHERTY, THOMAS M

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/973,600

Applicant(s)

TABOTA, JUN

Examiner

Thomas M. Dougherty

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3 and 5-8 is/are allowed.
- 6) ☒ Claim(s) 2 and 4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 2, is rejected under 35 U.S.C. 102(b) as being anticipated by Cullen (US 4,346,597). Cullen shows (figs. 1 and 2) an acceleration sensor comprising an acceleration detection element (12) including two surface acoustic wave resonators (34) including a pair of IDT electrodes arranged on each of the front and back surfaces of said piezoelectric substrate (12), wherein said acceleration detection element (12) is supported at an end thereof such that said acceleration detection element is deflected in the thickness direction of the piezoelectric substrate under acceleration. Note that as Cullen shows the claimed structure this operation is inherent, less the Applicants' device does not function as claimed. Fig. 3 shows acceleration being detected differentially (see summing circuit) by detecting a frequency change or an impedance change of said two surface acoustic wave resonators which is caused by the deflection of the acceleration detection element.

The applicants' contention that "Cullen teaches only a single surface acoustic wave resonator" is not correct. In figure 1 he shows a side elevational view of his invention, with components 34, 22 and 40 numbered on one surface and 46 on the opposing surface. In figure 2 he shows a sectioned view of figure 1 and in that view he

clearly shows a surface acoustic wave resonator on his piezoelectric material 12. That resonator consists of signal connection electrodes, leads and interdigitated electrodes as well as dummy electrodes. In his figure 3 he clearly shows two surface acoustic wave elements which oppose each other through the piezoelectric material 12. Note that 17 is the upper surface SAW device in figure 3 as well as in figure 1, and that 46 is the lower surface SAW device in figure 3 as well as in figure 1. Additionally, while the Applicant argues that element 34 is not a surface acoustic wave resonator, and is "disclosed as being a metallization 34 for connecting a transducer 20 to a pad 36, and thus, is clearly **not** a surface acoustic resonator" note that 34 is a part of such and reference to it is intended to show the surface where the resonator is located. Thus that argument is not persuasive.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cullen (US 4,346,597) in view of Watanabe (US 5,838,091). Given the invention of Cullen as noted above, he does not explicitly note a glass substrate with a piezoelectric film on it and the IDT on the film. Watanabe notes just such a structure at col. 4, lines 49-66. He doesn't disclose an acceleration sensor and associated circuitry. It would have been

obvious to one having ordinary skill in the art to employ the disclosed materials of Watanabe in the device of Murata et al. since glass is a well known, cheap and readily available material for a substrate in a SAW device, and its frequency can be easily adjusted.

In response to the applicants arguments that Cullen and Watanabe "fail to teach or suggest the unique combination and arrangement of elements recited in claims 2 and 4 of the present application", this is disputed in light of the further elucidation of Cullen as described above. Additionally, Watanabe was not cited to teach a pair of SAW resonators but was "relied upon merely to teach a glass substrate" as the Applicants note, which language indicates that the combination is itself is proper, since 'merely' points in the direction that such use would be obvious to one of ordinary skill in the art. Additionally, the reasons for citation of Watanabe have as noted in the paragraph above have not been disputed by the Applicants. Thus the arguments are not persuasive.

***Allowable Subject Matter***

Claims 1, 3 and 5-8 are allowed.

The following is an examiner's statement of reasons for allowance: The prior art fails to show or fairly suggest a bimorph piezoelectric accelerometer device which opposing SAW devices on opposing outer surfaces of the bimorph.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

**Conclusion**

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Direct inquiry concerning this action to Examiner Dougherty at (703) 308-1628.

  
tmd

April 22, 2003



